

ABSTRACT

Disclosed is a low-cost, high quality metal nanotube comprising Ni, Fe, Co or the like. A metal thin film having a thickness of 10 to 80 nm is formed as a cathode on one surface of a film having penetrated holes, and an electrolyte solution is filled between an anode and the cathode to which a voltage is applied. Metal ions in the electrolyte solution are electrochemically deposited on the walls of the penetrated holes, thereby forming metal nanotubes. A thermoplastic resin porous film such as a polycarbonate film, an alumina porous film or aluminum anodic oxide film may be used as the film, and the diameters of the penetrated holes are preferably 15 to 500 nm. The metal thin film can be formed by sputtering, and preferably comprises a platinum-palladium alloy. The electrochemical processing of nanostructured tailored materials is a unique technique.